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An Overview on Determinants and Impact of Passive Smoking on Oral Health among Adults in Malaysia

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Abstract:

This review aims to explore the determinants and impact of passive smoking on oral health among adults in Malaysia. Passive smoking, also known as second hand smoke exposure, refers to the inhalation of tobacco smoke emitted by active smokers in the surrounding environment. While the adverse effects of active smoking on oral health are well-documented, the specific impact of passive smoking on oral health in Malaysia requires further investigation. This review will examine the determinants of passive smoking, including social and cultural factors, as well as the consequences it has on oral health, such as periodontal diseases, oral cancer, and dental caries. By understanding these determinants and consequences, appropriate interventions can be implemented to reduce passive smoking and its detrimental effects on oral health.

1. Introduction

Passive smoking has emerged as a significant public health concern globally. Despite the progress made in tobacco control measures, second hand smoke exposure remains prevalent in many countries, including Malaysia. Passive smoking, also known as second hand smoke (SHS) or environmental tobacco smoke, is the inhalation of smoke emitted from tobacco

products by non-smokers in the same environment as smokers[1]. Cigarette smoking, whether active or passive is becoming a growing public health issue. Despite the abundance of knowledge on the risks associated with active smoking, the population's health consequences of passive smoking are frequently overlooked. There is no safe level of exposure to SHS, and its negative health consequences last for a long time[2]. It has been well established that passive smoking can have negative health effects on individuals, particularly in regards to respiratory, cardiovascular health, Cancers and mental health[3–10]. However, there is also evidence to suggest that passive smoking can have a significant impact on oral health[11,12].

In Malaysia, passive smoking is a major public health issue, with high rates of smoking prevalence and exposure to secondhand smoke. Studies have shown that passive smoking in adults is associated with a number of factors, including gender, age, occupation, and level of education. Women and individuals in lower socioeconomic groups are particularly vulnerable to passive smoking[13].

The impact of passive smoking on oral health is also significant. Studies have found that passive smoking is associated with a higher risk of oral cancer, periodontal disease, and tooth loss[11,14]. It is believed that the chemicals found in tobacco smoke can irritate and damage oral tissues, leading to inflammation, infection, and ultimately, tooth loss[15]. Furthermore, passive smoking can also have negative effects on the oral microbiome, the collection of microorganisms that inhabit the mouth. This can lead to a range of oral health problems, including bad breath, cavities, gum disease and oral cancer [16–18].

Passive smoking is a significant public health issue in Malaysia, with a range of negative impacts on both respiratory and oral health. In order to address the issue of passive smoking and its impact on oral health in Malaysia, there is a need for comprehensive public health campaigns to raise awareness of the risks of passive smoking and to promote smoke-free

environments[19]. This can include measures such as smoke-free policies in public places, education campaigns targeting high-risk populations, and support for smoking cessation programs[20–24]. Addressing this issue will require a concerted effort from policymakers, healthcare professionals, and the general public to promote smoke-free environments and reduce exposure to second hand smoke. This narrative review aims to explore the associated factors of passive smoking and its impact on oral health in Malaysian adults, shedding light on the urgent need for effective interventions. Overall, this review is divided into three sections: Determinants of Passive Smoking in Malaysia, Passive Smoking's Impact on Oral Health, and Interventions and Recommendations.

2. Determinants of Passive Smoking in Malaysia

Second hand smoke (SHS) contains at least 250 hazardous compounds, 50 of which are known carcinogens[25]. According to the Global Adult Tobacco Survey, Malaysia (GATS-M), 39.8% and 38.4% of adults, respectively, were exposed to SHS in indoor workplaces or at home in 2011. 84.9% of those who visited public places such as cafes, coffee shops, bistros, bars and nightclubs, restaurants, government buildings, indoor shopping complexes and healthcare facilities reported exposure to SHS in cafes/coffee shops/bistros, 78.7% in bar/nightclubs, 71% in restaurants, 28.2% in government buildings, 13.6% in indoor shopping complexes and 8.7% in healthcare facilities. Such SHS exposure rates warrant special attention since higher rates of SHS exposure may lead to more incidences of tobacco-related diseases, increasing the burden of SHS-related diseases among Malaysians[22]. Understanding the prevalence of SHS exposure and the determinants are useful for reduction of SHS exposure. Therefore various determinants of passive smoking in Malaysia are discussed in subsequent subsections.

2.1 Social Factors

2.1.1 Prevalence of smoking in the population

Smoking prevalence in Malaysia has been a public health concern for many years. Malaysia has a relatively high smoking prevalence rate among adults, with approximately 25% of the population being regular smokers[26]. This high prevalence increases the likelihood of exposure to SHS, as more individuals are smoking in various public and private settings.

In 2015, the National Health and Morbidity Survey (NHMS) aimed to assess the prevalence of smoking among adults and identify factors associated with smoking behaviour. The findings of the NHMS 2015 provided insights into the prevalence and factors associated with smoking in Malaysia. It was accessed that males had a substantially higher incidence than females (43.0% versus 1.4%). Smoking frequency was highest among other ethnicities (35.7%), those aged 25-44 years (59.3%), and those with low educational attainment (25.2%). Males, those with lesser levels of education, and Malays were all far more likely to smoke[27].

2.1.2 Cultural norms and social acceptance

Smoking is considered impolite around Malayas as many do not smoke for religious reason[28]. Under Islamic law in Malaysia, smoking is classified as an activity that is strictly forbidden[29]. Nevertheless, smoking is still socially accepted in many Malaysian communities, and cultural norms play a role in shaping attitudes towards smoking. Traditionally, smoking has been considered a social activity and a way to establish camaraderie among individuals, especially among men[30]. Smoking is often associated with relaxation, socializing, and even a symbol of masculinity in some circles[31]. This cultural acceptance has influenced the prevalence of smoking in Malaysia. In certain social settings, such as family gatherings, smoking may be common and accepted, leading to increased exposure to second hand smoke among non-smokers.

However, in recent years, there has been an increasing recognition of the health risks associated with smoking, both for smokers and those exposed to second hand smoke. The Malaysian government has implemented various measures to curb smoking, including banning smoking in certain public areas, increasing taxes on tobacco products, and implementing graphic health warnings on cigarette packages[32,33]. Despite these efforts, the social acceptance of smoking still poses challenges in reducing passive smoking. The prevalence of smoking in public places, such as restaurants, coffee shops, and open-air areas, can lead to involuntary exposure to second hand smoke for non-smokers[34]. Efforts are being made to raise awareness about the harms of passive smoking and to promote smoke-free environments in Malaysia. However, changing cultural norms and social acceptance takes time and requires a multi-faceted approach involving education, policy changes, and public health campaigns.

2.1.3 Influence of family and friends

Family and friends play a significant role in influencing smoking behaviour in Malaysia, as they do in many other countries. It is well established that most adults begin smoking in late childhood or adolescence, and individuals who started smoking at a younger age were more likely to smoke more cigarettes per day[35], continue smoking into adulthood[36], and were less likely to quit smoking due to nicotine addiction[37,38]. Over 80% of adult smokers in Malaysia began smoking before the age of 21[39]. The influence of family and friends can be both direct and indirect, affecting individuals' decisions to smoke and their exposure to passive smoking.

Direct Influence:

i. Role Modeling: Family members who smoke may serve as role models, normalizing smoking behavior and increasing the likelihood that others will start smoking. Both parental and peer smoking behaviors have been found to be

associated with smoking among adolescents and young adults[40]. Generally, it was noticed in that children and adolescents have easier access to cigarettes if their family members or friends smoke[36,41]. In Malaysia, it was found that maximum children and adolescent smokers obtain cigarettes from commercial sources[42–45].This availability can increase the likelihood of experimentation and initiation of smoking.

ii. Family pressure: Some individuals may feel pressured or coerced by family members to smoke, either through direct persuasion or teasing. Punishment, such as ridicule or social exclusion, may be imposed on individuals who do not conform to smoking behaviours, further reinforcing the normative practice[46,47].

iii. Peer Pressure: Friends who smoke can exert peer pressure on their peers to join them in smoking, especially during social gatherings or when trying to fit into a particular group[48].

Indirect Influence:

i. Social Norms: Family and friends can shape an individual's perception of smoking as a socially acceptable behaviour. If smoking is prevalent among close social circles, it may be perceived as a norm, making it more likely for individuals to start smoking[48].

ii. Socialization: Social interactions within family and friend groups often involve smoking, such as smoking breaks, shared cigarettes, or smoking-related activities. When children and adolescents associate with individuals who smoke, it normalizes the behavior of smoking and makes it seem more acceptable or normative. Observing others smoke can create the perception that smoking is a common and socially desirable behaviour.[49]

iii. Adolescents' attitude: According to human development theory, the majority of adolescents who start smoking do so throughout adolescence because abstract thinking triggers "Formal Operations" and "Personal Fable"[50], which cause adolescents to believe they are unique and invincible which may lead them to engage in detrimental health behaviours, such as smoking[51].

iv. Positive and negative reinforcement: Positive reinforcement refers to rewards or encouragement for smoking, such as being praised or admired by peers who smoke. Negative reinforcement involves the removal of an unpleasant experience when smoking, such as relieving stress or anxiety. These reinforcement processes can make smoking more appealing or attractive to individuals, especially when they seek social acceptance or relief from negative emotions[52].

v. Coercion, teasing, and punishment are additional factors that can influence tobacco use.

This normalization of smoking behaviour can contribute to an increased likelihood of smoking initiation and indoor smoking. Indoor smoking is prevalent in Malaysia, particularly in homes and hospitality establishments such as restaurants, cafes, and bars. This practice exposes non-smokers, including workers and customers, to second hand smoke. The existing home-smoking habits of men are shaped by a lack of knowledge and understanding about the health dangers linked with SHS exposure[29]. Understanding the factors that influence men's decisions to create a smoke-free home is critical for the development of culturally appropriate interventions that address their responsibilities to safeguard non smoking household members from SHS exposure[29].

Adolescent smoking prevention measures are critical for reducing the incidence of adult smokers and the likelihood of second hand smoke exposure. Educational programs[53] and

restricting youth access to cigarettes[54] have been identified as some of the most effective strategies to avoid smoking initiation, as evidenced by several studies, including those relevant to decreasing smoking initiation among adolescents[55] and minimising the transition from experimental smokers to habitual smokers[56]. These actions motivated them to make a sound decision, smoke less frequently and not to share their cigarettes[53,54]. Through tobacco control laws issued in 2004, the Malaysian government imposed limitations on the possession, use, and purchase of tobacco products by those under the age of 18, as well as a ban on the sale of tobacco products to teenagers. These regulations are enforced by the Ministry of Health. Furthermore, the country has banned retail sales of cigarettes and other tobacco products and established a minimum price for cigarettes[57].

1.2.4. Workplace and public smoking policies

To reduce smoking prevalence among Malaysians to 15% by 2025, the Malaysian Ministry of Health has begun and put into place a number of anti-smoking policies and strategies[58]. The Control of Tobacco Products Regulation (CTPR) under the Food Act 1983, for example, was implemented in 1993 and prohibits smoking in seven different types of public spaces; it is periodically revised to include new public locations. As of 2015, there were 38 different types of no-smoking zones in public places[22]. These regulations prohibit smoking in certain public places, such as air-conditioned restaurants, government buildings, public toilets, and public transportation vehicles. Malaysia ratified the Framework Convention on Tobacco Control (FCTC) in December 2005, which encourages signatory nations to provide universal measures to protect nonsmokers from SHS exposure and to ensure that at least 90% of their population is protected from SHS exposure through smoke-free policies or laws[29]. However, public support is required to pass and enforce successful smoke-free policies. In a democratic country like Malaysia, public is critical for ratifying smoke-free legislation and regulations,

as well as fostering acceptance and adherence to them. The enforcement of these regulations can vary, and smoking is still relatively common in outdoor public areas[59].

In terms of workplaces, Malaysia has implemented smoking restrictions through the Occupational Safety and Health Act 1994. Under this act, employers are required to provide a smoke-free environment for their employees, which includes indoor areas and designated smoking areas[22]. However, the effectiveness of these policies may vary depending on the enforcement and compliance of employers. While the smoking policies in Malaysia aim to protect non smokers from exposure to second hand smoke, there may still be instances where passive smoking occurs due to non-compliance or inadequate enforcement[42]. The effectiveness of these policies in reducing passive smoking depends on several factors, including public awareness, compliance with regulations, enforcement efforts, and societal attitudes towards smoking. Enforcement of smoking regulations can be challenging due to various factors, including inadequate resources, limited manpower, and difficulties in monitoring and detecting smoking violations. These challenges can hinder effective implementation of smoke-free policies and contribute to continued passive smoking exposure[22].

It is worth noting that the Malaysian government has been taking steps to strengthen tobacco control measures in recent years. These measures include graphic health warnings on cigarette packaging, increased tobacco taxes, and campaigns to promote smoking cessation[32,33,60]. These efforts aim to reduce smoking prevalence and consequently minimize the impact of passive smoking on the population.

2.1.5 Limited awareness and education

Despite efforts to raise awareness about the dangers of passive smoking, knowledge about the health risks associated with second hand smoke exposure may be limited among some

segments of the population. This lack of awareness can contribute to a lack of demand for smoke-free environments. Limited awareness and education among adults in Malaysia regarding the effects of SHS is a concerning issue[29]. Smoking and exposure to SHS pose significant health risks, and it is essential to raise awareness about these dangers to protect individuals and communities. Healthcare professionals, including doctors and nurses, should play an active role in educating their patients about the risks of smoking and SHS. They can provide personalized counseling, offer smoking cessation resources, and encourage regular health check-ups to monitor any smoking-related health issues. Establishing and promoting smoking cessation support services can assist individuals who want to quit smoking. These services can include helplines, counseling centers, and access to nicotine replacement therapies[61]. By providing effective support, more individuals may be motivated to quit smoking and reduce the overall exposure to SHS.

Addressing the limited awareness and education among adults in Malaysia about the effects of smoking and SHS requires a multi-faceted approach involving government agencies, healthcare providers, educational institutions, and community organizations. By increasing awareness and understanding, Malaysia can strive towards a healthier, smoke-free future for its citizens.

2.2 Economic factors

Lower-income individuals may be more likely to smoke and have limited resources to create smoke-free environments at home or advocate for smoke-free policies in public spaces[62,63]. The price of cigarettes is a crucial economic factor influencing smoking behaviour. Higher cigarette prices through increased taxes or excise duties can deter individuals, especially those with lower incomes, from smoking. However, affordability remains a concern in Malaysia, as cigarettes are relatively inexpensive compared to many other countries[64]. The

lower cost may encourage smoking initiation and hinder cessation efforts among adults. Smoking rates tend to be higher among individuals with lower incomes and lower socioeconomic status. These groups often face additional stressors and may be more likely to use smoking as a coping mechanism. Socioeconomic disparities can also affect exposure to SHS, as individuals in lower-income households may have limited options to avoid smoke-filled environments[7]. The type of employment and workplace conditions can impact smoking behavior and SHS exposure. Industries such as manufacturing, construction, and hospitality, where smoking prevalence tends to be higher, can expose workers to SHS[24]. Workplaces with comprehensive smoke-free policies and supportive smoking cessation programs can help reduce smoking rates and SHS exposure. Education plays a role in shaping attitudes towards smoking and awareness of its health risks[65]. Higher educational attainment is generally associated with lower smoking rates. Greater awareness about the health consequences of smoking and exposure to SHS can influence individuals' decisions to quit smoking and create smoke-free environments. Smoking-related health care costs can place a burden on individuals, families, and the healthcare system. Economic factors, such as the availability and accessibility of affordable healthcare services and insurance coverage, can affect individuals' ability to seek treatment for smoking-related illnesses and access cessation programs[66].

Efforts to address these economic factors and reduce smoking rates in Malaysia include increasing cigarette taxes, implementing comprehensive tobacco control policies, and raising public awareness about the harms of smoking and SHS exposure[42,67]. Encouraging smoking cessation among active smokers and providing accessible smoking cessation services is also important to improve both their own oral health and the oral health of those around them. These measures aim to make smoking less affordable, promote smoke-free environments, and support individuals in quitting smoking[68].

2.3 Environmental Factors

In Malaysia, several determinants contribute to passive smoking among adults, including indoor smoking restrictions, ventilation systems, and the accessibility and affordability of tobacco products. Let's discuss each of these factors in more detail:

i. Indoor smoking restrictions: The presence and enforcement of indoor smoking restrictions play a crucial role in minimizing passive smoking. In Malaysia, the government has implemented various measures to restrict smoking in public places, including indoor settings such as restaurants, offices, and public transportation. However, the effectiveness of these restrictions depends on their enforcement and compliance It was observed that exposure to SHS was significantly lower in restricted areas compared with non-restricted areas[42]. The smoking ban at open-air eateries in Malaysia has reduced cigarette smoke exposure to passive smokers by 8.5% from 2015-2019[69]. Smoking bans were found to be associated with enhanced respiratory health among SHS-exposed non smokers and different population subgroups[59].

ii. Ventilated spaces: Adequate ventilated indoor spaces can help reduce the concentration of second hand smoke and mitigate passive smoking. Properly designed ventilation systems can remove smoke particles, dilute tobacco smoke, and improve air quality[70]. However, the effectiveness of ventilation systems can vary, and their impact on reducing passive smoking depends on factors such as system design, maintenance, and the proximity of smoking areas to non-smoking areas[71].

iii. Accessibility tobacco products: The availability and accessibility of tobacco products can influence the prevalence of smoking and, consequently, passive smoking. If tobacco products are readily available and easily affordable, it can contribute to

higher smoking rates, increasing the likelihood of exposure to second hand smoke[72,73].

It's important to note that passive smoking is a complex issue influenced by various factors beyond those mentioned above. Other factors like proximity to smokers, duration of exposure and smoke concentration also determine the effect of passive smoking[42,74].The closer an individual is to a smoker, the higher the concentration of harmful chemicals they are exposed to, including those that can affect oral health. The longer a person is exposed to SHS, the greater the potential impact on oral health.[11,75] The number of smokers and the intensity of smoking in a particular environment can determine the level of exposure and subsequent impact on oral health[76,77].

3. Impact of Passive Smoking on Oral Health

Passive smoking has been widely recognized as a significant health risk, contributing to various adverse health effects, including periodontal diseases, oral cancer, dental caries and other oral health issues among adults. Although there is limited research specifically focusing on the Malaysian adult population, studies conducted in other countries can provide insights into the potential impact of passive smoking on oral health. Also some studies focused on children, and we have referred them considering it is reasonable to assume that similar risks may apply to adults exposed to second-hand smoke. In the following subsections different impacts of Passive smoking on oral health among adults are discussed in details

3.1 Periodontal Diseases

In Malaysia, where smoking prevalence is relatively high, passive smoking can have a notable impact on the oral health of adults. Periodontal diseases are inflammatory conditions that affect the gums and supporting structures of the teeth. They range from mild gum inflammation (gingivitis) to more severe forms, such as periodontitis, which can lead to tooth

loss if left untreated[78]. Passive smoking has been linked to an increased risk of periodontal (gum) disease and severity of periodontal disease[11,79]. The harmful chemicals in tobacco smoke can lead to inflammation of the gums, damage to the soft tissues in the mouth, and a compromised immune response. These effects can contribute to the development and progression of periodontal disease, characterized by inflammation, gum recession, and potential tooth loss[14,80,81]. Individuals who already have periodontal diseases may experience an exacerbation of their condition when exposed to second hand smoke[14,79]. The toxic components in smoke can further damage the gum tissues and hinder the healing process, leading to more severe periodontal problems. The chemicals in smoke can interfere with the body's healing mechanisms and reduce the efficacy of interventions aimed at controlling or reversing periodontal diseases[14]. This may result in prolonged or less successful treatment outcomes[82].The combination of active smoking and passive smoking can significantly increase the risk of tooth loss. Periodontal diseases, exacerbated by tobacco smoke exposure, can lead to the destruction of the supporting structures of the teeth, ultimately resulting in tooth loss[11]. Though Akinkugbe *et al* discovered a link between ETS exposure and periodontitis in passive smokers in a systematic review[83], there is dearth for direct data on the association between second hand smoking and periodontal disorders in Malaysian adults.

3.2 Oral Cancer

Oral cancer refers to cancer that develops in the mouth, including the lips, tongue, cheeks, gums, and throat[84]. The primary cause of oral cancer is tobacco use, whether it is active smoking or passive smoking[85]. Tobacco smoke contains numerous harmful chemicals, including carcinogens such as benzene, formaldehyde, and polycyclic aromatic hydrocarbons[86]. These substances can damage the cells in the oral cavity and throat, leading to the development of oral cancer[85]. Prolonged exposure to tobacco smoke may contribute to the development of oral lesions, including leukoplakia and erythroplakia, which can progress

to cancer. Numerous scientific studies have demonstrated a strong association between passive smoking and an increased risk of oral cancer. Adults exposed to passive smoking are at an elevated risk of developing oral cancer compared to those who are not exposed. The risk is dependent on factors such as the duration and intensity of exposure, as well as individual susceptibility.

3.3 Dental Caries:

Dental caries, commonly referred to as tooth decay or cavities, is a multi factorial disease influenced by various factors, including oral hygiene practices, diet, genetic predisposition, and exposure to environmental tobacco smoke. Passive smoking has been linked to inflammation of the oral mucosa, impaired salivary gland function, a decrease in serum vitamin C, and a decrease in immune function[87]. These factors can contribute to an increased risk of dental caries (tooth decay).

Several studies have investigated the potential association between passive smoking and dental caries among adults and children[87–91]. Although the specific research findings may vary, there is evidence to suggest that passive smoking can contribute to an increased risk of dental caries. Tobacco smoke contains numerous chemicals, including nicotine, carbon monoxide, and various toxic compounds, which can affect oral health. These substances may alter the oral microflora, hinder saliva production, reduce the effectiveness of saliva in neutralizing acids, and promote the growth of bacteria associated with dental caries[92,93]. Passive smoking has been shown to reduce salivary flow and alter the composition of saliva, leading to a decrease in its protective properties[11,94]. Saliva plays a crucial role in buffering acids, remineralizing tooth enamel, and washing away food particles, thus protecting against dental caries[95]. Changes in saliva due to SHS exposure can compromise these protective mechanisms. Passive smoking may influence the oral microbiota, leading to an imbalance in

bacterial populations[96]. Some studies have suggested that exposure to SHS can increase the prevalence of cariogenic bacteria in the oral cavity, which are known to contribute to the development of dental caries[94,97]. It is important to note that the association between passive smoking and dental caries is complex and influenced by multiple factors. Other individual and environmental factors, such as socioeconomic status, diet, oral hygiene habits, and access to dental care, can also play a significant role in the development of dental caries[98,99].

Other impact of passive smoking are tooth discoloration and staining, bad breath,delayed healing , reduced sense of taste and smell etc. The tar and nicotime in tobacco smoke can cause tooth discoloration and staining over time, leading to a yellow or brownish appearance of the teeth.[100,101] Passive smoking can contribute to persistent bad breath (halitosis) by causing hyposalivation and periodontal disease due to the presence of tobacco-related chemicals in the mouth[102,103].

To mitigate the impact of passive smoking on oral health, it is crucial to promote smoke-free environments and implement comprehensive tobacco control measures[104]. Additionally, regular dental check-ups and professional cleanings, along with good oral hygiene practices, can help minimize the risk of oral diseases[105], even in the presence of passive smoking. Consulting with a dental professional or oral health expert would be beneficial for personalized advice and guidance.

It's worth noting that passive smoking can also have systemic effects on overall health, including cardiovascular diseases, respiratory problems, and various types of cancer[1]. Therefore, efforts to reduce exposure to SHS are crucial for protecting both oral and general health. It is important to note that the impacts of passive smoking on oral health can vary depending on individual susceptibility, the level of exposure, and overall oral hygiene

practices. However, it is generally advised to minimize exposure to SHS to maintain optimal oral health.

4. Interventions and Recommendations

It has been well-documented that passive smoking can have adverse effects on oral health. In the context of Malaysia, where smoking prevalence is relatively high, addressing the determinants and impact of passive smoking on oral health among adults is crucial. Here are some interventions and recommendations to mitigate the effects of passive smoking on oral health in Malaysia based on different successful policies and undertakings all over the world[20–24,106–111] .

1. Public Awareness Campaigns: Launching public awareness campaigns to educate the general population about the harmful effects of passive smoking on oral health can help create a sense of urgency and promote behavioural changes. These campaigns can utilize various media channels, including television, radio, print and social media platforms.
2. Education and Awareness: Public health campaigns should focus on educating the general public about the risks of passive smoking on oral health. This includes providing information about the various oral health problems associated with SHS, such as gum disease, oral cancer, and tooth loss. The campaigns should emphasize the importance of maintaining a smoke-free environment to protect oral health.
3. Targeted Messaging: Tailored messages should be developed to target different demographics, such as parents, children, and healthcare professionals. Messages should highlight the vulnerability of children to the harmful effects of SHS and the role of parents in protecting their children's oral health. Healthcare professionals

should be informed about the impact of passive smoking on oral health so that they can provide appropriate advice and support to their patients.

4. Media and Advertising: Public health campaigns can utilize various media platforms to disseminate information effectively. This includes television and radio commercials, online advertisements, social media campaigns, and public service announcements. Engaging and impactful visuals, testimonials, and stories from individuals affected by passive smoking can help create a powerful message[112].
5. Partnership and Collaboration: Collaboration with various stakeholders is crucial for the success of public health campaigns. This includes partnering with government agencies, non-profit organizations, dental associations, schools, and community groups. Working together will ensure a coordinated effort to raise awareness, implement smoke-free policies, and provide support to those affected by passive smoking.
6. Resources and Support: Public health campaigns should provide resources and support for individuals who want to quit smoking or seek help for their oral health problems caused by passive smoking. This includes information on smoking cessation programs, dental clinics, and helplines where individuals can receive guidance and support.
7. Evaluation and Monitoring: Continuous evaluation and monitoring of the public health campaigns are essential to assess their effectiveness and make necessary adjustments. Data collection on awareness levels, changes in attitudes and behaviors, and oral health outcomes can help measure the impact of the campaigns and guide future initiatives.
8. Smoke-Free Policies: Implementing and enforcing comprehensive smoke-free policies in public places, including restaurants, bars, workplaces, and public

transportation, can significantly reduce exposure to SHS. These policies should be supported by appropriate signage, monitoring systems, and penalties for non-compliance. Smoke-Free Policies: Public health campaigns should advocate for the implementation and enforcement of smoke-free policies in public places, including restaurants, workplaces, public transportation, and recreational areas. The campaigns can highlight the benefits of smoke-free environments on both respiratory and oral health, encouraging individuals to support and comply with these policies.

9. Smoke-Free Homes: Encouraging individuals to establish smoke-free homes is essential to protect non-smokers, particularly children, from SHS. Providing educational materials and support services to assist smokers in quitting or transitioning to smoke-free alternatives can contribute to creating healthier home environments.
10. Healthcare Provider Education: Integrating education on the oral health impacts of passive smoking into the curriculum of dental and medical schools can enhance healthcare providers' knowledge and awareness. Equipping healthcare professionals with the necessary skills to educate patients about the dangers of passive smoking and provide smoking cessation counselling is crucial.
11. Smoking Cessation Programs: Implementing accessible and evidence-based smoking cessation programs that specifically target adults can be highly effective. These programs can include counselling, nicotine replacement therapies, and behavioural interventions. Collaborations with healthcare facilities, community centres, and workplaces can increase the reach and impact of such programs.
12. Research and Data Collection: There is limited research specifically focusing on the Malaysian adult population regarding the potential impact of passive smoking on oral health. Encouraging research on the determinants and impact of passive smoking on

oral health among adults in Malaysia can provide valuable insights for designing targeted interventions. Robust data collection and analysis can help identify specific populations at higher risk and inform the development of tailored approaches.

13. Collaboration and Partnerships: Fostering collaborations among government agencies, non-governmental organizations, healthcare professionals, academic institutions, and community leaders is vital for a comprehensive response to passive smoking. These partnerships can facilitate the coordination of efforts, resource sharing, and the development of effective strategies.
14. Support for Smoke-Free Initiatives: Providing financial and technical support to organizations and initiatives that promote smoke-free environments and advocate for tobacco control can strengthen their capacity to address passive smoking and oral health issues effectively.
15. Regular Oral Health Check-ups: Encouraging regular dental check-ups among adults can help identify oral health problems associated with passive smoking at an early stage. Dentists can provide personalized advice, preventive measures, and treatment options to mitigate the effects of passive smoking on oral health.
16. Policy Evaluation and Revision: Regular evaluation of existing policies related to smoking and passive smoking is essential to ensure their effectiveness and identify areas for improvement. Policy revisions should be based on scientific evidence and best practices to align with international standards for tobacco control.
17. Adoption of additional tobacco control measures, such as increased tobacco pricing and taxes, stringent regulations on tobacco marketing, and expanded application of the smoke-free policy in public places.

By implementing these interventions and recommendations, Malaysia can make significant progress in reducing the impact of passive smoking on oral health among adults. It requires a

multi-sectoral approach, involving government agencies, healthcare providers, educational institutions, and community participation to create a smoke-free environment and improve oral health outcomes.

5. Conclusion

Passive smoking has a significant impact on oral health among adults in Malaysia, contributing to periodontal diseases, oral cancer, and dental caries. Social and environmental determinants play crucial roles in shaping second hand smoke exposure. It is imperative to implement evidence-based interventions, including public health policies and dental healthcare initiatives, to minimize passive smoking and protect the oral health of individuals in Malaysia. By addressing this issue comprehensively, improvements in oral health outcomes can be achieved and overall public health can be promoted.

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